Baton Rouge Community College

Academic Affairs Master Syllabus

Date Approved or Revised: July 23, 2008

Course Name: PHYSICS FOR TECHNICAL STUDENTS
Course Number: PHYS 211

Lecture Hrs. 3 **Lab Hrs. 0** **Credit Hrs. 3**

Course Description: The second semester of a two-semester sequence in classical physics for students in engineering or other technical disciplines. Includes vector operations with calculus and analytic geometry, electric and magnetic fields, electrical energy and power; circuitry, electromagnetic waves; geometrical and physical optics, quantization of energy and momentum, wave-particle duality and relativity.

Prerequisites: Physics 210 and Math 211

Suggested Enrollment Cap: 30

Learning Outcomes: Upon completion of Physics 211, the student will be able to achieve the following with a 70% or better success rate:

- Apply measurement fundamentals and perform unit conversions in scientific measurement systems on assignments and exams;
- Demonstrate a knowledge of the fundamental concepts of vector operations, electric energy, power, and circuitry; inductance and magnetic energy, wave properties, geometric and physical optics, general relativity, and atomic theory as it relates to quantum mechanics on assignments, quizzes, and exams;
- Integrate, correlate, and apply the principles learned in Physics 210 to course content on assignments, quizzes, and exams;
- Demonstrate analytical, quantitative, and problem solving capability through analysis and synthesis as evidenced by completion of written assignments;
- Relate course concepts in physics to everyday life on assignments, quizzes, and exams;
- Solve scientific problems through synthesis and analysis on assignments and exams; and
- Demonstrate the relevance of physics to everyday life on assignments and exams.

General Education Learning Outcomes: This course supports the development of competency in the following areas. Students will:

- Think critically, collect evidence (statistics, examples, testimony) and make decisions based on the evidence, comprehend and analyze texts, and solve problems using methods of critical and scientific inquiry;
- Communicate effectively using standard written English;

- Organize, analyze, and develop useful information useful by employing mathematical principles; and
- Relate the general concepts of science to the world and demonstrate an understanding of the impact of these processes and their concepts on human lives.

Assessment Measures: Instructors may use a variety of assessment measures to assess student performance. But, the following assessments will be used in all sections:

- Individual instructor-designed exams will collectively assess all learning outcomes and will be administered during the semester as listed in the course syllabus;
- Individual instructor and collaborative departmentally-designed comprehensive final exam, adhering to a department-determined content, will assess all learning outcomes; and
- Individual instructor-designed or collaborative instructor-designed assignments will be given as a portion of the total grade and will include homework, quizzes, and individual and collaborative group assignments and projects; all assignments will be graded using an instructor-designed rubric.

Information to be included on the Instructors' Course Syllabi:

- ***Disability Statement*:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.

- ***Grading:*** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor's and/or the department's policy for make-up work. For example in a speech course, "Speeches not given on due date will receive no grade higher than a sixty" or "Make-up work will not be accepted after the last day of class."

- ***Attendance Policy*:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.

- ***General Policies*:** Instructors' policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.

- ***Cheating and Plagiarism*:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.

- ***Safety Concerns:*** In some programs this may be a major issue. For example, "No student will be allowed in the safety lab without safety glasses." General statements such as, "Items that may be harmful to one's self or others should not be brought to class."

- ***Library/ Learning Resources:*** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

Expanded Course Outline:

I. Electromagnetism
   - A. Electric Charge, Force and Field
   - B. Electric Potential, Current and Circuitry
   - C. Magnetic fields, Induction, and Circuitry
   - D. Electromagnetic Waves

II. Optics
   - A. Reflection, Refraction and Polarization
   - B. Optical Instrumentation
   - C. Interference and Diffraction

III. Modern Physics
   - A. Relativity
   - B. Energy, Momentum and Relativity
   - C. Electromagnetism and Relativity

IV. Quantum Physics
   - A. Atomic Structure
   - B. Quantum Mechanics